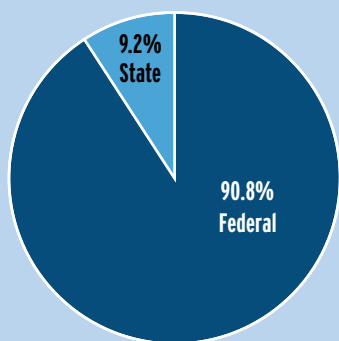


FY 2019 At-A-Glance

OCT. 1, 2018 - SEPT. 30, 2019

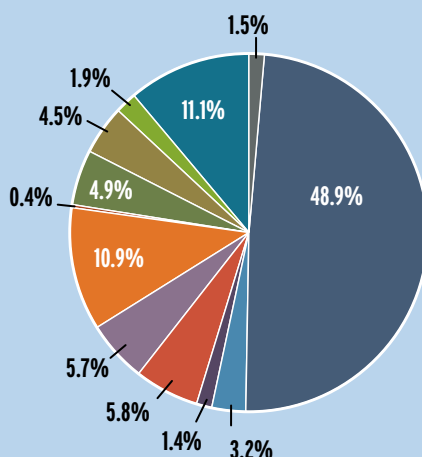
This publication presents a summary of Research and Library funding statistics and project progress for Fiscal Year (FY) 2019. The tables on pages 2 through 7 list all MDOT-funded research projects by topic area that were active or completed during 2019. These listings include both individual Michigan research projects and multi-state pooled fund projects.

FY 2019 SP&R Part II Expenditures by Funding Source



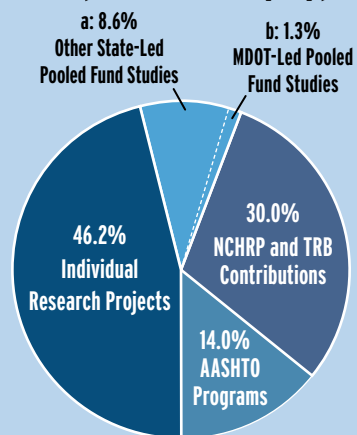
State Research Funds	\$ 437,193.39
Federal Research Funds	\$ 4,298,069.25
TOTAL	\$ 4,735,262.64

FY 2019 Research Project Expenditures by Focus Area



Administration	\$ 39,185.32
Bridges and Structures	\$ 1,295,744.60
Environment and Water Resources	\$ 85,598.03
Freight and Logistics	\$ 37,000.00
Intelligent Transportation Systems and Signals	\$ 152,581.69
Maintenance	\$ 150,019.24
Mobility and Traffic Incidents	\$ 288,567.74
Nonmotorized Planning and Development	\$ 9,878.06
Pavements and Materials	\$ 130,067.83
Rest Areas, Utilities and Landscaping	\$ 119,187.24
Surveys and Automated Design	\$ 50,847.39
Transportation Safety	\$ 293,724.50
TOTAL	\$ 2,652,401.64

FY 2019 SP&R Part II Expenditures by Type



Individual Research Projects	\$ 2,185,966.93
Multi-State Pooled Fund Studies	
a: Participation in Pooled Fund Studies Led by Other States	\$ 406,500.00
b: Participation in MDOT-Led Pooled Fund Studies	\$ 59,934.71
Research Project Expenditures	\$ 2,652,401.64
NCHRP and TRB Contributions	\$ 1,419,861.00
AASHTO Programs	\$ 663,000.00
TOTAL	\$ 4,735,262.64

MDOT 2019 Research

THESE TABLES ARE ORGANIZED BY FOCUS AREA:

RESEARCH PROJECTS:

- ☒ Completed research reports that were released in FY 2019: October 2018 to September 2019.
- ☐ Research contracts that were active during FY 2019.

POOLED FUND PROJECTS:

- ☒ Multi-state transportation pooled fund studies led by MDOT.
- ☐ Other multi-state transportation pooled fund studies in which MDOT participates, either through an FY 2019 contribution or through past contributions that are still producing value for Michigan.

ABBREVIATIONS:

FAM: Focus Area Manager

RM: Research Manager

Completed project reports are available at www.Michigan.gov/MDOTResearch.

A mark in the "Spotlight" column indicates that a Research Spotlight for this project can be found at www.Michigan.gov/MDOTResearch.

"# of Participating States" for some pooled funds includes Canadian provinces and agencies such as the Federal Highway Administration (FHWA).

A complete FY 2019 annual report can be found at www.Michigan.gov/MDOTResearch.

Bridges and Structures										
FAMs: Brad Wagner and Jason DeRuyver, RM: Michael Townley										
Report Number	Title	Contractor	Investigator	Project Manager	Start Date	End Date	Total Budget	% Complete	FY 19 Expenditures	Spotlight
SPR-1670	<u>Commercial Production of Non-Proprietary Ultra-High Performance Concrete</u>	UM	El-Tawil	Kahl	4/1/17	12/31/18	\$183,385.67	100%	\$0.00	X
SPR-1682	<u>Unmanned Surface Vessels for Bridge Scour Monitoring</u>	Ayres Associates	Schroeder	Skrocki	10/1/16	5/31/19	\$597,865.02	100%	\$319,505.36	X
SPR-1642	Bridge Design System Analysis and Modernization	MTU	Colling	Guerrazzi	11/1/13	9/30/19	\$549,199.49	100%	\$0.00	X
SPR-1690	<u>Evaluating Long-Term Capacity and Ductility of Carbon Fiber Reinforced Polymer Prestressing and Post-Tensioning Strands</u>	LTU	Grace	Chynoweth	10/1/13	9/30/19	\$880,691.52	100%	\$158,958.39	X
	Asset Management of Retaining Walls	UM	Athanasopoulos-Zekkos	E. Burns	10/1/16	11/30/19	\$310,675.12	100%	\$98,318.37	
	<u>Best Practices for Modernizing MDOT Bridge Design Manual, Guides and Policy Documentation</u>	WSU	Aktan	Wagner	1/18/18	12/31/19	\$284,741.92	66%	\$156,158.81	
	Accelerated Bridge Preservation Technologies	MSU	Corley-Lay	E. Burns	1/29/18	1/29/20	\$136,571.10	59%	\$57,845.55	
	Bridge Structural Analyses for Staged Construction and Constructability Review	WSU	Aktan	Jansson	7/1/17	4/1/20	\$305,937.12	51%	\$62,938.95	
	Concrete Deterioration of Prestressed Bridge Beams	WMU	Attanayake	Bruinsma	3/1/19	2/28/21	\$262,619.34	12%	\$31,893.97	
	Evaluation of Camber and Deflections for Bridge Girders	WSU	Menkulasi	Kopper	3/1/19	3/1/21	\$315,425.84	25%	\$77,837.12	
	Effects of Concrete Cure Time on Epoxy Overlay and Sealant Performance	WMU	Attanayake	Belcher	7/1/18	12/31/21	\$407,272.79	48%	\$185,890.15	

Bridges and Structures, continued

FAMs: Brad Wagner and Jason DeRuyver, RM: Michael Townley

Report Number	Title	Contractor	Investigator	Project Manager	Start Date	End Date	Total Budget	% Complete	FY 19 Expenditures	Spotlight
	Statewide Overall Carbon Fiber Composite Cable Bridge Monitoring	LTU	Grace	Chynoweth	12/17/13	9/30/25	\$1,175,711.17	28%	\$71,463.22	

Bridges and Structures Pooled Fund Studies

Study Number	Title	MDOT Project Manager	Lead State or Agency	# of Participating States	MI 2019 Expenditures	Expenditures Prior to 2019	Total MI Commitment	Start Date	End Date
TPF-5(281)	Center for the Aging Infrastructure: Steel Bridge Research, Inspection, Training and Education Engineering Center - SBRITE	Curtis	IN DOT	10	\$30,000.00	\$50,000.00	\$110,000.00	10/1/17	6/30/21
TPF-5(363)	Evaluation of 0.7-Inch-Diameter Carbon Fiber Reinforced Polymer (CFRP) Pretensioning Strands in Prestressed Beams	Kahl	MI DOT	4	\$24,934.71	\$111,798.23	\$136,733.00	12/5/17	9/30/20
TPF-5(372)	Building Information Modeling (BIM) for Bridges and Structures	Wagner	IA DOT	21	\$20,000.00	\$20,000.00	\$100,000.00	11/8/17	11/30/22
TPF-5(387)	Development of an Integrated Unmanned Aerial Systems (UAS) Validation Center	Zakrzewski	IN DOT	9	\$0.00	\$0.00	\$75,000.00	9/1/18	12/1/21

Construction

FAM: Matt Bellgowan, RM: André Clover

Report Number	Title	Contractor	Investigator	Project Manager	Start Date	End Date	Total Budget	% Complete	FY 19 Expenditures	Spotlight
	Training Tools for Effective Advancement of Digital Technologies for Construction Field Operations	MSU	El-Gafy	Bellgowan	2/1/20	4/30/22	\$241,477.24	0%	\$0.00	

Environment and Water Resources

FAM: Hal Zweng, RM: Michael Townley

Report Number	Title	Contractor	Investigator	Project Manager	Start Date	End Date	Total Budget	% Complete	FY 19 Expenditures	Spotlight
	Improved Calculation of Scour Potential in Cohesive Soils and Scour-Susceptible Rock	MTU	Liu	Curtis	5/1/19	6/30/20	\$104,917.82	24%	\$25,047.40	
	Reduction of pH Levels from Underdrain Outlets	LTU	Bandara	Zweng	5/1/18	12/31/20	\$169,010.19	41%	\$60,550.63	

Freight and Logistics Pooled Fund Study

Study Number	Title	MDOT Project Manager	Lead State or Agency	# of Participating States	MI 2019 Expenditures	Expenditures Prior to 2019	Total MI Commitment	Start Date	End Date
TPF-5(396)	Mid-America Freight Coalition (MAFC) Phase 3	Karnes	WI DOT	10	\$37,000.00	\$0.00	\$111,000.00	2/1/19	9/30/21

Intelligent Transportation Systems

FAM: Collin Castle, RM: André Clover

Report Number	Title	Contractor	Investigator	Project Manager	Start Date	End Date	Total Budget	% Complete	FY 19 Expenditures	Spotlight
	Sponsorship of the TRB Roundtable on Preparing for Automated Vehicles and Shared Mobility Services	TRB	N/A	Clover	10/1/17	9/30/19	\$50,000.00	100%	\$25,000.00	
	Connected Vehicle and Transportation Technology Research	UM	Sayer	Parker	10/1/13	6/30/20	\$3,050,024.81	86%	\$0.00	
	Development of a Network-Level Evaluation Tool for Managing ITS Infrastructure	Cambridge Systematics	Van Hecke	Gorman	6/1/19	6/30/21	\$485,242.25	9%	\$42,581.69	
	Recruit and Maintain/Upgrade a High-Tech Workforce for Emerging Technologies	Center for Automotive Research	Dziczek	Feldpausch	10/15/19	6/30/21	\$278,065.27	0%	\$0.00	

Intelligent Transportation Systems Pooled Fund Studies

Study Number	Title	MDOT Project Manager	Lead State or Agency	# of Participating States	MI 2019 Expenditures	Expenditures Prior to 2019	Total MI Commitment	Start Date	End Date
TPF-5(206)	Research Program to Support the Research, Development and Deployment of System Operations Applications of Vehicle Infrastructure Integration (VII)	Castle	VA DOT	23	\$50,000.00	\$400,000.00	\$450,000.00	10/1/08	6/30/20
TPF-5(359)	Evaluating New Technologies for Roads Program Initiatives in Safety and Efficiency (ENTERPRISE), Phase II	Feldpausch	MI DOT	9	\$35,000.00	\$80,000.00	\$115,000.00	1/2/18	11/30/20
TPF-5(389)	Connected Vehicle Pooled Fund Study	Castle	VA DOT	26	\$0.00	\$0.00	\$100,000.00	10/1/18	9/30/21

Maintenance

FAM: Tim Croze, RM: André Clover

Report Number	Title	Contractor	Investigator	Project Manager	Start Date	End Date	Total Budget	% Complete	FY 19 Expenditures	Spotlight
	Develop and Implement a Freeze-Thaw Model-Based Seasonal Load Restriction Decision Support Tool	MTU	Liu	Longworth	4/1/17	3/31/20	\$166,705.69	91%	\$71,603.49	
	Effectiveness of Green Strobes on Winter Maintenance Vehicles and Equipment	MSU	Zockaie	Gaus/Longworth	6/4/19	5/31/20	\$124,660.03	23%	\$28,415.75	

Maintenance Pooled Fund Studies

Study Number	Title	MDOT Project Manager	Lead State or Agency	# of Participating States	MI 2019 Expenditures	Expenditures Prior to 2019	Total MI Commitment	Start Date	End Date
TPF-5(290)	Aurora Program	Perry	IA DOT	19	\$25,000.00	\$125,000.00	\$150,000.00	8/1/14	10/31/20
TPF-5(330)	No Boundaries Roadway Maintenance Practices	Croze	OH DOT	22	\$0.00	\$40,000.00	\$40,000.00	5/29/15	6/30/19
TPF-5(353)	Clear Roads Winter Highway Operations Pooled Fund - Phase II	Longworth	MN DOT	36	\$25,000.00	\$50,000.00	\$125,000.00	10/1/16	12/31/21

Mobility and Traffic Incidents

FAM: Steve Cook, RM: André Clover

Report Number	Title	Contractor	Investigator	Project Manager	Start Date	End Date	Total Budget	% Complete	FY 19 Expenditures	Spotlight
SPR-1681	<u>Signal Performance Measures Pilot Implementation</u>	AECOM	Klawon	Adelman	11/1/16	12/31/18	\$252,448.63	100%	\$45,893.32	X
	Development of a Michigan-Specific VISSIM Protocol for Submissions of VISSIM Modeling	WSP	Hill	Engle	11/27/18	12/31/19	\$162,504.32	56%	\$90,688.42	
	Integration of Unmanned Aerial Systems Data Collection into Day-to-Day Usage for Transportation Infrastructure/Program Asset Management and Systems Operations	MTU	Brooks	Cook	6/12/19	6/11/22	\$906,558.55	11%	\$101,986.00	

Mobility and Traffic Incidents Pooled Fund Studies

Study Number	Title	MDOT Project Manager	Lead State or Agency	# of Participating States	MI 2019 Expenditures	Expenditures Prior to 2019	Total MI Commitment	Start Date	End Date
TPF-5(176)	Traffic Analysis and Simulation Pooled Fund Study	Firman	FHWA	16	\$0.00	\$70,000.00	\$70,000.00	6/1/16	9/30/21
TPF-5(319)	Transportation Management Center (TMC) Pooled Fund Study	Peplinski	FHWA	22	\$25,000.00	\$100,000.00	\$125,000.00	4/17/15	4/16/22
TPF-5(347)	Development of Maintenance Decision Support System	Longworth	SD DOT	14	\$25,000.00	\$50,000.00	\$125,000.00	10/1/16	9/30/21
TPF-5(351)	Self-Deicing LED Signals	Smalley	KS DOT	7	\$0.00	\$60,000.00	\$60,000.00	3/25/16	6/30/21

Nonmotorized Planning and Development

FAM: Deb Alfonso, RM: Mary Hoffmeyer

Report Number	Title	Contractor	Investigator	Project Manager	Start Date	End Date	Total Budget	% Complete	FY 19 Expenditures	Spotlight
	Synthesis of National Best Practices on Pedestrian and Bicycle Design, Guidance and Technology Innovations	MSU	Gates	McQuiston	4/1/19	9/30/20	\$213,401.91	5%	\$9,878.06	

Pavements and Materials

FAMs: Curtis Bleach and John Staton, RM: André Clover

Report Number	Title	Contractor	Investigator	Project Manager	Start Date	End Date	Total Budget	% Complete	FY 19 Expenditures	Spotlight
SPR-1678	<u>Updated Analysis of Michigan Traffic Inputs for Pavement ME Design</u>	MSU	Haider	Schenkel	10/1/16	8/31/18	\$253,563.11	100%	\$567.83	X

Pavements and Materials Pooled Fund Studies

Study Number	Title	MDOT Project Manager	Lead State or Agency	# of Participating States	MI 2019 Expenditures	Expenditures Prior to 2019	Total MI Commitment	Start Date	End Date
TPF-5(267)	Accelerated Performance Testing for the NCAT Pavement Test Track	Bleech	AL DOT	19	\$0.00	\$990,000.00	\$990,000.00	4/15/15	3/31/20
TPF-5(269)	Development of an Improved Design Procedure for Unbonded Concrete Overlays	Krom	MN DOT	8	\$0.00	\$60,000.00	\$60,000.00	4/13/12	4/30/19
TPF-5(297)	Improving Specifications to Resist Frost Damage in Modern Concrete Mixtures	Stallard	OK DOT	19	\$17,500.00	\$87,500.00	\$105,000.00	1/10/14	9/1/19
TPF-5(305)	Regional and National Implementation and Coordination of Mechanistic-Empirical (ME) Design	Eacker	FHWA	24	\$0.00	\$20,000.00	\$20,000.00	10/1/16	9/30/19
TPF-5(313)	Technology Transfer Concrete Consortium (TTCC)	Staton	IA DOT	36	\$12,000.00	\$48,000.00	\$60,000.00	4/10/15	12/31/20
TPF-5(320)	Base Funding for the North Central Superpave Center	Kennedy	IN DOT	7	\$25,000.00	\$100,000.00	\$150,000.00	2/3/15	9/30/22
TPF-5(341)	National Road Research Alliance (NRRRA)	Bleech	MN DOT	8	\$0.00	\$450,000.00	\$450,000.00	2/22/16	2/22/21
TPF-5(368)	Performance Engineered Concrete Paving Mixtures	Staton	IA DOT	20	\$15,000.00	\$30,000.00	\$75,000.00	1/1/17	12/31/21
TPF-5(375)	National Partnership to Determine the Life-Extending Benefit Curves of Pavement Techniques (MnROAD/NCAT Joint Study - Phase II)	Bleech	MN DOT	23	\$50,000.00	\$0.00	\$250,000.00	1/1/19	12/30/23
TPF-5(379)	Technology Exchange on Low-Volume Road Design, Construction and Maintenance	Leix	IA DOT	10	\$10,000.00	\$0.00	\$10,000.00	10/1/18	12/31/20
TPF-5(385)	Pavement Structural Evaluation with Traffic Speed Deflection Devices (TSDDs)	Shapter	VA DOT	23	\$0.00	\$0.00	\$135,000.00	3/1/19	9/30/21

Rest Areas, Utilities and Landscaping

FAM: Bill Stonebrook, RM: Michael Townley

Report Number	Title	Contractor	Investigator	Project Manager	Start Date	End Date	Total Budget	% Complete	FY 19 Expenditures	Spotlight
	Slope Restoration on Urban Freeways	MSU	Cregg	Alton	4/1/17	4/30/21	\$527,138.78	59%	\$99,187.24	

Rest Areas, Utilities and Landscaping Pooled Fund Study

Study Number	Title	MDOT Project Manager	Lead State or Agency	# of Participating States	MI 2019 Expenditures	Expenditures Prior to 2019	Total MI Commitment	Start Date	End Date
TPF-5(346)	Regional Roadside Turfgrass Performance Testing Program	Urda	MN DOT	5	\$20,000.00	\$60,000.00	\$80,000.00	3/25/16	12/31/19

Surveys and Automated Design

FAM: Dan Belcher, RM: Michael Townley

Report Number	Title	Contractor	Investigator	Project Manager	Start Date	End Date	Total Budget	% Complete	FY 19 Expenditures	Spotlight
SPR-1680	3-D Highway Design Model Cost-Benefit Analysis	WSP	Mitchell	Wilkerson	7/1/17	2/28/19	\$204,616.47	100%	\$50,847.39	X

Transportation Safety

FAM: Mark Bott, RM: André Clover

Report Number	Title	Contractor	Investigator	Project Manager	Start Date	End Date	Total Budget	% Complete	FY 19 Expenditures	Spotlight
SPR-1683	Evaluation of the Michigan Department of Transportation's Highway Safety Programs	MSU	Gates	Shaughnessy	6/1/16	3/31/19	\$329,281.82	100%	\$169,957.12	X
	Effectiveness of Crash Fact/Safety Message Signs on Dynamic Message Signs	MSU	Savolainen	Bott	3/15/19	4/15/20	\$130,485.50	16%	\$20,483.18	
	Measure the Operational Cost and Benefit of Speed Feedback Signs	MSU	Gates	Uzcategui	7/1/18	6/30/20	\$212,704.74	20%	\$41,919.92	
	Evaluating the Impacts of the 2017 Legislative Mandated Speed Limit Increases	MSU	Savolainen	Bott	3/1/19	2/28/22	\$238,159.75	9%	\$21,152.37	
	Performance and Safety of the US-23 Flex Route	MSU	Kassens-Noor	Firman	3/1/19	11/30/22	\$196,494.10	10%	\$20,211.91	

Transportation Safety Pooled Fund Studies

Study Number	Title	MDOT Project Manager	Lead State or Agency	# of Participating States	MI 2019 Expenditures	Expenditures Prior to 2019	Total MI Commitment	Start Date	End Date
TPF-5(255)	Highway Safety Manual Implementation	Shaughnessy	FHWA	23	\$20,000.00	\$60,000.00	\$80,000.00	11/9/15	12/31/20
TPF-5(343)	Roadside Safety and Research for MASH Implementation	Torres	WA DOT	28	\$0.00	\$100,000.00	\$200,000.00	10/1/16	12/31/21

Administration

Report Number	Title	Contractor	Investigator	Project Manager	Start Date	End Date	Total Budget	% Complete	FY 19 Expenditures	Spotlight
	Research Program Services	CTC	Casey	Hoffmeyer	1/1/16	9/30/20	\$443,124.41	38%	\$39,185.32	

National Initiatives

Study Number	Title	MDOT Project Manager	Lead State or Agency	# of Participating States	MI 2019 Expenditures	Expenditures Prior to 2019	Total MI Commitment	Start Date	End Date
SPR1284(019)	AASHTO Engineering Technical Service Programs	Clover	AASHTO/FHWA	N/A	\$150,000.00	\$0.00	\$150,000.00	10/1/18	9/30/19
SPR1684(187)	AASHTO 3.01 - Construction/Materials Module Enhancement/Implementation and Staff Training	D. Burns	AASHTO	N/A	\$513,000.00	\$378,000.00	\$1,262,200.00	10/1/16	9/30/20
TPF-5(397)	TRB Core Program Activities FY 2019 (TRB FY 2020)	Clover	AASHTO/FHWA	27	\$190,026.00	\$0.00	\$190,026.00	10/1/18	9/30/19
TPF-5(419)	National Cooperative Highway Research Program (NCHRP) for FY 2019	Clover	FHWA	51	\$1,229,835.00	\$0.00	\$1,200,000.00	10/1/18	9/30/19

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MISSION

Promoting innovative
research for economic benefit and
improved quality of life

VALUES

Quality • Customer Orientation
Teamwork • Integrity • Pride

RESEARCH SERVICES STATISTICS (FY 2019)

2	8	12	34	33
Amendments	Closed individual research projects	New individual research projects	Individual research projects	Pooled fund studies and other national research initiatives

LIBRARY SERVICES STATISTICS (FY 2019)

15,996	216	383	75	594
Total circulation (MDOT and C&T Library)	New materials	Reference services	Interlibrary loans	MDOT Library website users

CONTACT US

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